WHAT IS CLAIMED IS:

1. A single-stranded nucleic acid containing at least one electron donor moiety and at least one electron acceptor moiety, said electron donor moiety and said electron acceptor moiety being covalently attached to said nucleic acid.

2. A single-stranded nucleic acid according to claim 1 wherein said covalent attachment is to the ribose-phosphate backbone of said nucleic acid.

3. A single stranded nucleic acid according to claim 1, wherein said single stranded nucleic acid is capable of hybridizing to a complementary target sequence in a second single stranded nucleic acid to form a hybridization complex.

4. A single stranded nucleic acid according to claim 3, wherein said hybridization complex is capable of transferring at least one electron between said electron donor moiety and said electron acceptor moiety.

5. A composition comprising a first single stranded nucleic acid containing at least one electron donor moiety and a second single stranded nucleic acid containing at least one electron acceptor moiety, wherein said electron donor moiety and electron acceptor moiety are covalently linked to the ribose-phosphate backbone of said first and second single stranded nucleic acids.

6. A composition according to claim 5 wherein said first single stranded nucleic acid is capable of hybridizing to said second single stranded nucleic acid to form a double stranded nucleic acid.

7. A double stranded nucleic acid composition according to claim 6 wherein said first single stranded nucleic acid is hybridized to said second single stranded nucleic acid.

8. A composition according to claim 7 wherein said composition is capable of transferring at least one electron between said electron donor moiety and said electron acceptor moiety.

9. A composition according to claim 5 wherein said first and second single stranded nucleic acids are capable of hybridizing to a target sequence stranded nucleic acid, comprising at least a first target domain and a second target domain, wherein said first nucleic acid is capable of hybridizing to said first target domain and said second nucleic acid is capable of hybridizing to said second target domain to form a hybridization complex.

10. A composition according to claim 9 wherein said first target domain and said second target domain are adjacent to one another.

11. A composition according to claim 10 wherein said first nucleic acid and said second nucleic acid in said hybridization complex are ligated together.

12. A composition according to claim 10 wherein said hybridization complex is capable of transferring at least one electron between said electron donor moiety and said electron acceptor moiety.

13. A composition according to claim 10 wherein said target sequence further comprises an intervening target domain between said first and said second target domain.

14. A composition according to claim 13 further comprising an intervening single stranded nucleic acid sequence capable of hybridizing to said intervening target domain to form a hybridization complex.

15. A composition according to claim 14 wherein said hybridization complex is capable of transferring at least one electron between said electron donor moiety and said electron acceptor moiety.

16. A method for making a single stranded nucleic acid containing an electron transfer moiety at the 5' terminus, comprising

a) incorporating a modified nucleotide into a growing nucleic acid at the 5' position to form a modified single stranded nucleic acid;

b) hybridizing said modified single stranded nucleic acid with a complementary single stranded nucleic acid to form a double stranded nucleic acid;

c) reacting said double stranded nucleic acid with an electron transfer moiety such that said moiety is covalently attached to said modified single stranded nucleic acid; and

d) separating said complementary single stranded nucleic acid from said modified single stranded nucleic acid containing said electron transfer moiety.

17. A method for making a single stranded nucleic acid containing an electron transfer moiety covalently attached to an internal nucleotide, comprising

a) incorporating a modified nucleotide dimer into a growing nucleic acid to form a modified single stranded nucleic acid;

b) hybridizing said modified single stranded nucleic acid with a complementary single stranded nucleic acid to form a double stranded nucleic acid;

c) reacting said double stranded nucleic acid with an electron transfer moiety such that said moiety is covalently attached to said modified single stranded nucleic acid; and

d) separating said complementary single stranded nucleic acid from the modified single stranded nucleic acid containing said electron transfer moiety.

18. A method for making a single stranded nucleic acid containing an electron transfer moiety covalently attached to the 3' terminal nucleotide, comprising

a) incorporating a modified nucleotide via enzymatic addition or replacement into a nucleic acid;

b) hybridizing said modified single stranded nucleic acid with a complementary single stranded nucleic acid to form a double stranded nucleic acid;

c) reacting said double stranded nucleic acid with an electron transfer moiety such that said moiety is covalently attached through said phosphoramide bond of said modified single stranded nucleic acid; and

d) separating said complementary single stranded nucleic acid from the modified single stranded nucleic acid containing said electron transfer moiety.

19. A method of detecting a target sequence in a nucleic acid sample comprising

a) hybridizing a single stranded nucleic acid containing at least one covalently attached electron donor moiety and at least one covalently attached electron acceptor moiety to said target sequence to form a hybridization complex;

b) determining the electron transfer rate between said electron donor moiety and said electron acceptor moiety in the hybridization complex; and

c) comparing said electron transfer rate with the electron transfer rate in the absence of the target

sequence as an indicator of the presence or absence of said target sequence.

20. A method of detecting a target sequence in a nucleic acid wherein said target sequence comprises a first target domain and a second target domain adjacent to said first target domain, wherein said method comprises:

a) hybridizing a first nucleic acid containing at least one electron donor moiety to said first target domain;

b) hybridizing a second nucleic acid containing at least one electron acceptor moiety to said second target domain;

c) determining the electron transfer rate between said electron donor moiety and said electron acceptor moiety while said first and second nucleic acids are hybridized to said first and second target domains; and

d) comparing said electron transfer rate with the electron transfer rate in the absence of the target sequence as an indicator of the presence or absence of said target sequence in said nucleic acid sample.